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ABSTRACT

Data on Scholastic Aptitude Test (SAT) scores by race are analyzed in order to explain observed differences in scores among racial and ethnic segments of college-bound test takers. A social psychological correlate that mediates between environmental factors and SAT performance is emphasized. Consideration is given to the finding that blacks at the same level of test performance exhibited greater self-esteem than did whites on 14 self-rated abilities. Observed differences were not explained by a number of covariates introduced as statistical controls. Differences in self-esteem are observed to exist at constant levels of high school grade performance, eliminating the easy explanation that any self-esteem differential is an artifact of test score bias. College-bound blacks and whites evaluated themselves on the same dimensions of ability, and the level of self-esteem among blacks depended less on academic achievement in high school than did the level of self-esteem among whites. The potential use of self-esteem and self-concept measures as predictors of college performance is addressed. (Author/SW)

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Race, Academic Achievement, and Self-Concept of Ability

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Daniel R. Coleman, Chairman
Forum Publication
Advisory Committee

Race, Academic Achievement, and Self-Concept of Ability

Abstract

In the year-and-a-half since the College Board released detailed tables on SAT scores by race, much of the heated reaction has now abated. This study is one of many that will be necessary to explore carefully the data behind those tables and seek a fuller explanation of the observed differences in SAT scores among racial and ethnic segments of college-bound test takers. To contribute one piece to this important puzzle to be solved, we here highlight a social psychological correlate that mediates between environmental factors and SAT performance. We begin with the finding that blacks at the same level of test performance exhibit greater self-esteem than whites on a series of self-rated abilities. Attempts to explain observed differences by introducing a number of covariates as statistical controls were unsuccessful. Furthermore, the differences in self-esteem are observed to exist at constant levels of high school grade performance, eliminating the easy explanation that any self-esteem differential is an artifact of test score bias. Implications of our analysis are discussed and directions for further research suggested.

Race, Academic Achievement, and Self-Concept of Ability

INTRODUCTION AND PERSPECTIVES

In the fall of 1982, the College Board published a statistical report^1 that included a large number of tables profiling the differences among racial and ethnic segments of test takers. The Board had for years resisted calls to release this data, primarily because of fears that scrutiny of the differences in test scores by race would damage self and public perceptions of individuals who are members of minority groups.^2 In 1980, the College Board reversed its position and released two years later detailed tables by race and, further, offered access to Admissions Testing Program data to interested researchers.^3 The Board made its decision knowing that it would very likely receive criticism for releasing the data and that these actions would fuel the controversy over whether the tests are culturally biased^4 and what weight, if any, should be given to test scorers in the selection of students for college admission.

The published racial profiles, at the time of their release, precipitated a flurry of commentary--most warning against reaching hasty conclusions, many calling for a re-examination of the American educational system that perpetuates observed racial differences, and some asking for a comprehensive research effort that seeks a complete explanation of the causes and an elaboration of the consequences.

The first author even went on record, after reviewing a pre-release copy of the report, criticizing the Board for presenting raw statistical tables without a full and balanced discussion of how each table might be interpreted. Despite all of this, the College Board's decision to release these data by race was, in retrospect, a good decision. The report has stimulated work that would not have been done otherwise and should result in a better appreciation of the magnitude of the educational deficit. The detailed tables are at least a first step towards broadening our understanding of the determinants of the problem. And now that the furor has died down, careful research has a chance to proceed.

Literature Review

Research on self-concept begins with the premise that experiences within reference groups and evaluations from more generalized others affect directly the formation of self-image. Tangible indications of academic achievement in high school, therefore, should be expected to have considerable influence on the self-rated abilities of college-bound youth. This research further presumes that self-perception and self-esteem can significantly affect future behavior and performance.^5 The literature on racial differences in educational and status attainment stresses particularly the importance of the social psychological variables thought to be related to academic achievement: motivation, ambition, educational and occupational aspirations, and the like.

Porter (1974) and Portes and Wilson(1976) suggest that academic performance, although a strong predictor of education attainment for whites, is less so for blacks. They believe that self-esteem may be more important for blacks because while whites can depend on "institutionalized mechanisms of support" to move them through the system, blacks depend more on a positive perception of self to maintain sufficient levels of motivation and ambition. Self-evaluation or self-esteem appears then to be an important factor in determining behavorial outcomes for both blacks and whites, although a positive self-image may be more central to an explanation of black educational achievement.

There appears to be some controversy over whether blacks display lower, or higher levels of self-esteem than whites. Whether through the process of reflected appraisal or social comparison, blacks were found in the 1950's to exhibit lower self-esteem.^6 According to the theory of reflected appraisal, if one is a member of a minority group which is consistently exposed to negative feedback and evaluations, eventually these will be internalized, producing poor self-image. Social comparison theory on the other hand would suggest that self-image depends more on the consequences associated with minority group membership. In the 1950's and 1960's, researchers pointed to the lower relative standing of blacks on every dimension of social stratification.^7

In these ways researchers explained blacks' negative self-evaluations, and empirical studies conducted at this time reaffirmed this position. In the late 1960's and early 1970's studies on self-esteem, self-evaluation^8, and academic self-concept^9 began to find that blacks had self-images that were either equal to or higher than those of whites. These researchers reasoned that extensive defense mechanisms may be at work to explain the more positive black self-image. Theorists have suggested a variety of self-saving strategies.

These explanations fall into two general categories, interpersonal mediation and subcultural encapsulation. The first is often referred to as reference group theory. Blacks do not exhibit low levels of self-esteem because their evaluations are based on comparisons with significant others, who relative to whites may also achieve at lower academic levels. Proponents of this approach argue that blacks do not differ in their values and norms compared to whites, but may rate their own abilities relative to fellow blacks rather than to whites, who because of housing segregation are outside of blacks' frame reference.^10

Although reference group theory might conceivably explain why blacks do not suffer from lower self-esteem than whites, it fails to explain why black self-evaluations might be higher than whites. Subcultural encapsulation provides one explanation that allows for this finding and has become the theory to which most now seem to subscribe.^11 According to this view, blacks

substitute their own subcultural values for the dominate values that are institutionalized in wider American society.

Second, a well-developed, cultural support system is instrumental in preserving the positive self-evaluations by blacks. Often blacks may adopt a "system blame" attitude whereby they may account for their own low achievement. Negative evaluations for blacks then, may be discounted because they may blame the system for poor performance, rather than themselves. Whites, in contrast, may not have this kind of support system and thus are more subject to institutionalized evaluation. As a result, low achievement for whites may be more damaging to their self-esteem than for blacks.

The controversy over whether black self-esteem is lower than, equal to, or higher than whites, is certainly fundamental. Empirical studies have been used to support both sides of this issue. One explanation for this discrepancy is that the earlier studies were inaccurate due to unrepresentative samples and unreliable measures. Also, the methodology of this research has received criticism. Many of the empirical studies that found blacks to have low self-esteem, did not measure self-esteem directly.^12

The findings of more recent research also have been called into question. These researchers are accused of ignoring the true affliction of blacks in an attempt to free blacks from the stigma attached to having poor self-image. Variations in sample

size and measures of self-esteem in this research has also been criticized.^13 There appears to be, however, strong evidence that supports the observation that blacks on average, do not suffer from poor self-images. It may be that neither set of studies, past or present, are wrong, and that the self-esteem of blacks has improved over time. Self-consciousness movements in fact, may have contributed to the formation of more cohesiveness among blacks, which has improved their self-image.^14

Research Purpose

Because of the complexity of the issue, we have set modest goals. Let us describe these goals by first discussing what we are not trying to do. First, we are not attempting to provide a comprehensive view of all of the causes and effects associated with racially related differences in self-esteem. We hope that we may add another small piece to the puzzle, the solution of which may lead to a fuller view of the problem. Second, we are not attempting to develop a formal, theoretical model--although we do hope that our findings may suggest what some of the components of such a model might be. We simply propose to describe one indication of a social psychological difference that has arisen in the aggregate between black and white college-bound students. Little attempt will be made to specify the theoretical significance of the psychological process itself, except to suggest in broad terms that self-esteem in some way depends upon a combination of environmental factors and

academic achievement in high school, and that the level of an individual's self-esteem very probably affects important college outcomes: choice of college, choice of major, persistance to graduation, grade point average, and the like.

DATA SOURCES

The Educational Testing Service provided, at our request, data on college-bound students who took the Scholastic Aptitude Test for possible admission to college in fall, 1981. To make the data set a manageable size, an extract of all test takers was made consisting of two random samples: a two percent sample of whites and a ten percent sample of minority group members. Our data set includes 16,140 white and 19,423 minority test takers. In addition to SAT scores, other measured variables were made available for those who completed (about 90% did) the optional Student Descriptive Questionnaire (SDQ). Although based on self-reports, responses to the SDQ have been found to be acceptably accurate.^15 Lastly, a comparison of sample characteristics to the known population characteristics revealed no significant biases.

ANALYTICAL METHODS

First, to review the magnitude of the differences in academic achievement among college-bound students, the performance of

blacks and whites is compared on the verbal SAT, on the math SAT, and on a composite of self-reported high school grades in English, mathematics, foreign languages, biological sciences, physical sciences, and social studies.

Next, we will examine the difference in self-esteem between blacks and whites on 14 self-rated abilities. Again, to understand the distributional contrast better, percentages will be reported separately for those who rate themselves in the top ten percent compared to others of the same age and for those who rate themselves below average compared to others of the same age.

To control for the relationship between the three measures of academic achievement in high school and self-rated abilities, these percentages are broken down by categories of verbal SAT scores, math SAT scores, and high school grade averages.

To simplify our discussion of self-rated abilities, a maximum likelihood factor analysis (the Rao canonical procedure, with oblique rotations) will be employed to reduce the 14 self-rated abilities to a smaller number of dimensions that represent the similarities among abilities.

Using the three dimensions of self-esteem that are selected from the factor analysis, we will again control for academic achievement in high school, but this time we will present only

the measure of achievement that correlates most highly with the given ability dimension.

To determine if other measured variables may "explain" the differences between the levels of self-esteem reported by blacks and whites, a set of equations in reduced form will be presented to test the hypothesis that the differences are spurious.

Finally, some of the findings will be discussed from another regression analysis that compares the relative contributions of the same variables used in the first regression analysis to levels of self-esteem or the three composite dimensions across all racial and ethnic groups. This abbreviated analysis will be presented merely to help assess the extent to which findings reported here on blacks and whites may extend to other minority groups.

A DESCRIPTION OF DIFFERENCES BY RACE

Differences in Academic Achievement

It has been widely reported that blacks score an average of over two hundred points lower than whites on combined verbal and math SAT scores. Yet even this disturbing statistic obscures the magnitude of the educational deficit that exists between the races. In Figure 1, we display the distributions by race of test scores and average grades in high school.

Insert Figure 1 about here.

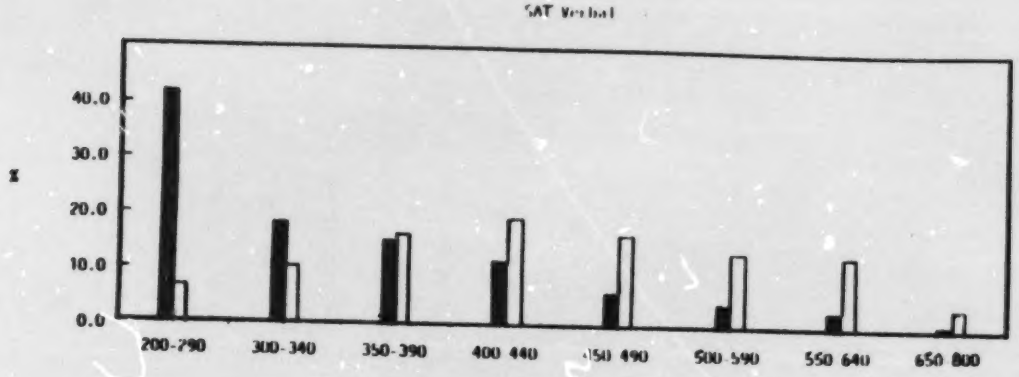
The deficit in our educational system, although most dramatically portrayed by the stark differences in achievement on the verbal SAT, can also be seen by comparing the racial distributions of scores on math SAT's and on grades in high school. Math SAT's are less vulnerable to the charges of cultural bias that have been made against the verbal SAT, and lower grade achievement in high school indicates a relative disadvantage that goes to the heart of how students are evaluated in the educational system.

Keep in mind that all of this is true despite the fact that the SAT participation rate is higher for blacks than for whites. If the difference in participation rates were controlled for, the deficit between the races might be even greater.^18

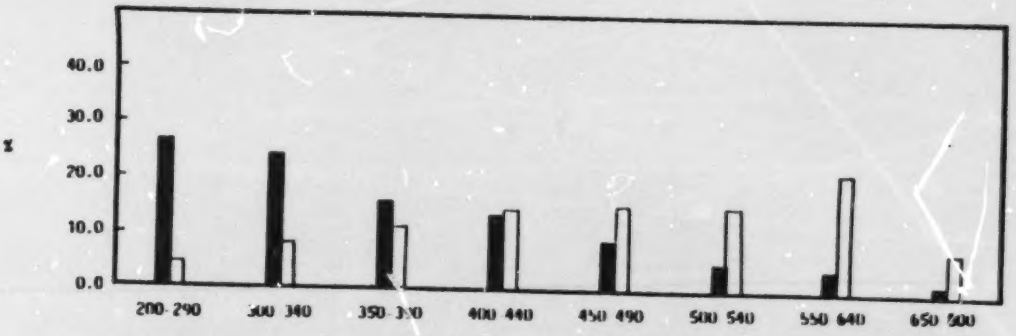
Differences in 14 self-rated abilities

Not only are there differences in academic achievement between blacks and white students, there are also variations in self perceptions of ability. T tests were computed to access the relative differences between racial groups. Table 1 displays means, standard deviations and associated t values for each area of ability by racial group. A lower mean rating indicates the group with higher self-esteem since a score of 1 denotes the

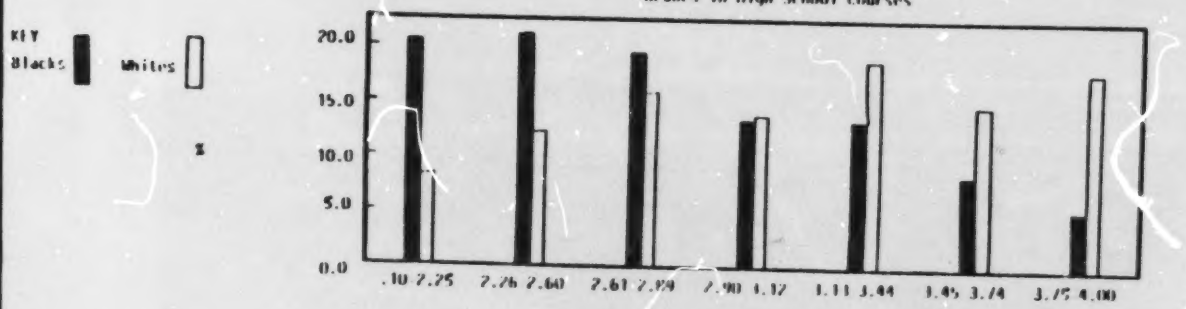
Figure 1. Measures of academic achievement in high school by race.



Verbal	Blacks	Whites
Mean	333	442
Median	317	437
Mode	200	390
N	7504	14675



Math	Blacks	Whites
Mean	360	483
Median	344	481
Mode	290	510
N	7502	14668



Average Grades in High School Courses	Blacks	Whites
Mean	2.75	3.10
Median	2.75	3.12
Mode	3.00	4.00
N	8079	15306

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highest self-rating and a 5, the lowest. Because the t value also indicates the direction of the relationship, negative values suggest that black students are rating themselves higher in ability compared to whites and positive values suggest the opposite. Among the 14 areas of ability, whites have higher mean self-ratings in ten areas. Only on acting, getting along with others, and leadership ability do blacks evaluate themselves higher. Self-perceptions on musical ability apparently does not differ significantly between races.

Insert Table 1 about here

The larger t values indicate differences that are least likely to have occurred by chance. The largest differences on which whites rate themselves higher are found on mechanical, mathematical, and scientific ability. The largest difference on which blacks rate themselves higher is on the getting along with others ability. Substantial differences also exist on artistic ability, creative writing, organizing work, and written expression. Although there are significant racial differences on the remaining abilities, these are less in magnitude. We might conclude here that whites, overall, have higher self-esteem than blacks--an important finding. There are, however, a number of considerations that must be addressed.

Table 1

Mean Rating of Ability by Race

Ability Area	Mean W[a]	Mean B[b]	Standard Deviation W	Standard Deviation B	T Value for the Difference between Means[c]
Acting	3.55	3.44	.94	1.04	- 7.66
Artistic	3.56	3.76	1.03	1.04	13.63
Athletic	3.01	3.08	1.05	1.16	4.67
C.writing	3.16	3.37	.93	1.02	14.72
Aiong	2.25	2.03	.93	1.00	-16.66
Leadership	2.78	2.73	1.03	1.11	- 3.23
Math	3.04	3.41	1.08	.99	26.09
Mechanical	3.52	3.90	1.05	1.00	27.55
Musical	3.51	3.51	1.16	1.16	NS
Org.work	2.85	3.00	.97	1.02	10.85
Sales	3.21	3.26	.99	1.03	3.53
Scientific	3.25	3.60	1.02	.97	25.92
Spoken	2.99	3.09	.98	1.05	6.97
Written	2.89	3.11	.98	1.03	9.40

[a] White students.

[b] Black students.

[c] All reported values are significant beyond the .001 level for a two-tailed test of probability.

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DIMENSIONS OF SELF-ESTEEM

Factor Analysis of Self-Ratings of Ability

Do blacks and whites rate themselves on totally different dimensions of ability? A full theory of cultural dissimilarity between the races might predict a divergence in the way abilities are related one to another. We must determine first if blacks and whites tend to associate the 14 measured skills in the same way.

A factor analysis (see Analytical Methods section above) was done for the sample of blacks and whites separately to ascertain the dimensions that describe aspects of self-image that are known to relate to later academic achievement. Initially, the model for blacks produced three factors and the model for whites produced four. Although the solutions for whites was meaningful, the solution for blacks produced factors that were confusing. Not only did many areas of ability load equally high across factors, but the factor patterns were difficult to interpret. In an attempt to improve the comparability with whites, the number of factors in the model for blacks was forced to four. (Although the eigenvalue for the fourth factor is not greater than 1.00, it is fairly close (.96) and does not display a drastic drop from the third factor's eigenvalue of 1.03.) This tactic yielded similar solutions for blacks and whites. Table 2 displays the final four factor dimensions for each solution and includes only the highest factor pattern weights.

These are the skills which contribute the most weight to individual factor dimensions.

Insert Table 2 about here

Note that athletic ability does not load highly on any of the factors; thus it was not included. Also, spoken expression appears to weight strongly on two factors and is included on both. Although factor weights are generally lower in the solutions for blacks, the relative weight of each skill on associated dimensions is about the same for each racial group. For example, written expression in both models contributes the most weight to the verbal dimensions. Although there are slight deviations from this pattern, these are trivial. For instance, on the math factor for blacks, mechanical ability has a slightly higher factor weight than mathematical ability. Yet for whites, the math factor weight is substantially higher than the factor weight for mechanical ability. A similar deviation may be observed on the special talent factor between acting and artistic ability.

No standard test exists for testing for differences between maximum likelihood factor analysis solutions. (We might have constructed confirmatory factor models using LISREL techniques, but chose not to. We leave this to others who may want to explore this interesting avenue of research.) We shall assume,

Table 2

Comparison of Factor Analysis Solutions for Whites and Blacks

Verbal Factor			Math Factor		
Ability	W[a]	B[b]	Ability	W	B
Written	.83	.80	Scientific	.71	.62
Creative Writing	.71	.62	Mathematical	.66	.55
Spoken	.36	.45	Mechanical	.55	.57

Interpersonal Factor			Special Talent Factor		
Ability	W	B	Ability	W	B
Leadership	.77	.76	Acting	.64	.51
Getting along	.68	.66	Artistic	.44	.52
Organizing Work	.53	.47	Musical	.37	.29
Sales	.52	.45			
Spoken	.42	.26			

Note. Pattern weights are reported if greater than .35 on at least one factor analysis solution.

[a] Pattern weights for white students.

[b] Pattern weights for black students.

because the differences between the solutions are trivial, that blacks and whites tend to view similarly the four dimensions of ability. Four scales were constructed by summing the scores of each ability that define the dimensions and dividing by the number of abilities added.

CONTROLLING FOR PAST ACADEMIC ACHIEVEMENT

Correlations with Dimensions of Self-Rated Abilities

Another consideration in comparing the levels of black and white self-esteem is the influence of past academic accomplishments on self-perception of ability. The literature on achievement suggests an important relationship between the two (see Literature Review section above). We do not include a discussion of the "special skills" dimension for two reasons. First, the dimension is less homogeneous than the other three. Because the variety of abilities on this dimension is wide, self-esteem across all of these skills is difficult to interpret.

Second, the indications are that, after partialling out the effects of father's education, any observed relationship between special skills and academic measures of achievement is based on a largely spurious association with parental background characteristics. Because of these problems, any analysis of the special skills dimension should, as a first step, control for the characteristics of parents.

To illustrate the association of each dimension of ability with the three measures of academic achievement (Table 3), Pearson product moment correlation coefficients were calculated for blacks and whites independently. As observed in the factor solutions, the coefficients for blacks are somewhat smaller compared to the coefficients for whites. However, all coefficients are statistically significant and blacks and whites are similar on the relative magnitude of the relationship between each measure of achievement and the dimensions of ability. For both racial groups, the verbal dimension correlates strongest with SAT verbal scores, the math dimension correlates strongest with SAT math scores, and the interpersonal dimension is most closely associated with the composite average of high school grades. These observed relationships appear to follow what one might expect. A possible exception may be the relationship between grade average and interpersonal skills. It is probable that high school grades reflect a broader range of probabilities and motivations than do test scores.

Insert Table 3 about here

In all instances, the correlations indicate that higher grades and test scores are associated with higher self-esteem, and the students who achieve less tend to have lower self-esteem. Given the major discrepancies between racial groups on the three

Table 3

Comparison of Pearson Correlation Coefficients for Whites and Blacks

Achievement Measure	Verbal Dimension		Math Dimension		Interpersonal Dimension		Special Talent Dimension	
	W[a]	B[b]	W	B	W	B	W	B
SAT Verbal	-.41	-.34	-.36	-.27	-.18	-.17	-.21	-.14
SAT Math	-.26	-.23	-.57	-.41	-.16	-.15	-.14	-.11
Grade Average	-.32	-.24	-.40	-.30	-.25	-.21	-.15	-.09

Note. All coefficients are significant beyond the .001 level.

[a] Coefficient for white students.

[b] Coefficient for black students.

measures of achievement and the mutually strong relationship between these measures and self-concept of ability, controlling for academic achievement may provide a fuller picture of racial self-esteem. To isolate best these effects, the academic measure with the strongest association with each dimension was selected as the control variable.

Tables

The components of the verbal dimension are broken down by eight categories of SAT verbal scores (Table 4), components of the math dimension are broken down by eight categories of SAT math scores (Table 5), and the components of the interpersonal dimension are broken down by the seven categories of average grades in high school (Table 6). These skills are ordered by the relative weight that each contributes to associated dimensions. For example, in Table 4, written expression appears first since it is the skill which has the highest factor weight on the verbal factor (refer back to Table 2).

Insert Tables 4, 5 and 6 here

Also, each of these tables is in two parts. The left side of each table displays percentages of students rating themselves in the top 10 percent or above for each category of achievement, and the right side displays percentages of students rating themselves below average in ability for the same categories of

Table 4

Distribution of Verbal Self-Rated Abilities by Race

	Ability Rating: Top 10% or Above						Ability Rating: Below Average						Average Frequency	
	Written Expression		Creative Writing		Spoken Expression		Written Expression		Creative Writing		Spoken Expression			
SAT Verbal	W[a]	B[b]	W	B	W	B	W	B	W	B	W	B	W	B
200-290	12	18	9	13	16	19	7	6	14	14	6	7	1000	1000
300-340	13	21	11	15	16	22	5	3	10	9	4	4	1510	1339
350-390	18	28	14	22	21	32	4	3	6	6	3	2	2450	1141
400-440	24	34	18	27	26	34	2	2	5	4	2	2	2770	844
450-490	31	43	27	31	31	43	1	1	3	3	1	1	2449	475
500-540	43	50	35	39	38	48	1	0	2	2	1	0	2021	280
550-640	54	55	45	45	47	53	0	0	1	2	1	2	1810	195
650-800	75	74	64	71	57	60	0	0	0	0	2	6	462	35
All[c]	30	26	24	20	30	27	3	4	5	9	2	4	14472	7364

Note. The percentages indicate the percent of respondents who rated themselves in the top 10 percent (left) and below average (right) for each area of ability.

[a] Percentage for white students.

[b] Percentage for black students.

[c] Percentage for all test takers.

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Table 5

Distribution of Math Self-Rated Abilities by Race

	Ability Rating: Top 10% or Above						Ability Rating: Below Average						Average Frequency	
	Scientific		Mathematical		Mechanical		Scientific		Mathematical		Mechanical			
SAT Math	W[a]	B[b]	W	B	W	B	W	B	W	B	W	B	W	B
200-290	6	8	3	9	8	6	22	21	25	16	32	40	569	1958
300-340	7	9	4	10	9	8	17	17	18	11	27	34	1183	1734
350-390	10	11	6	16	9	9	14	13	13	7	22	29	1645	1267
400-440	13	14	13	21	12	10	10	10	8	3	20	25	2137	1000
450-490	17	22	22	30	15	14	7	7	4	2	16	18	2339	687
500-540	24	27	36	42	18	17	5	3	2	1	13	14	2255	388
550-640	37	42	59	63	25	25	2	2	0	0	9	10	3185	292
650-800	66	64	88	90	34	44	0	2	0	0	5	10	1161	42
All	24	14	32	18	17	10	8	14	6	9	16	30	14474	7368

Note. The percentages indicate the percent of respondents who rated themselves in the top 10 percent (left) and below average (right) for each area of ability.

[a] Percentage for white students.

[b] Percentage for black students.

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Table 6

Distribution of Interpersonal Self-Rated Ability by Race

	Ability Rating: Top 10% or Above										Ability Rating: Below Average										Average Frequency	
	Leadership		Along		Sales		Organizing		Spoken		Leadership		Along		Sales		Organizing		Spoken			
GPA[a]	W[b]	B[c]	W	B	W	B	W	B	W	B	W	B	W	B	W	B	W	B	W	B	W	B
.10-2.25	24	33	48	62	16	18	14	21	13	19	4	4	0	0	8	8	3	4	6	6	1288	1583
2.26-2.60	31	40	58	66	21	19	19	23	22	23	2	2	0	0	6	8	2	2	4	5	1799	1618
2.61-2.89	35	41	60	66	24	22	25	28	25	25	2	2	0	0	5	6	1	2	2	3	2305	1488
2.90-3.12	37	44	61	70	22	25	29	31	26	30	2	2	0	0	5	6	1	1	3	3	2033	1054
3.13-3.44	43	51	62	72	26	25	37	38	30	35	2	2	0	0	4	6	1	1	2	2	2769	1061
3.45-3.74	48	57	66	74	26	31	47	45	37	36	1	0	0	0	5	4	1	1	2	1	2218	616
3.75-4.00	56	60	66	74	25	28	56	49	44	44	1	0	0	0	5	6	0	1	1	2	2459	429
All[d]	41	43	61	67	23	22	35	30	30	27	2	2	0	0	5	7	1	2	2	4	14871	7849

Note: The percentages indicate the percent of respondents who rated themselves in the top 10 percent (left) and below average (right) for each area of ability.

Abbreviations of abilities listed in columns: Along = Getting Along with Others, Organizing = Organizing Work.

[a]Grade point average of self-reported high school grades on academic oriented courses.

[b]Percentages for white students.

[c]Percentages for black students.

[d]Percentages for all test takers.

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achievement. In this way, blacks and whites of equal levels of academic achievement may be compared on both the very high and the very low ends of self-rated ability. Within constant categories of academic achievement, blacks appear to have higher self-esteem than whites on all three dimensions of ability. For example, on the verbal dimension (Table 4), a higher percentage of black students rate themselves in the top 10 percent or above in ability for all three components. Of those students who scored between 400 and 490 on verbal SAT's, only 24 percent of the whites, compared to 34 percent of the blacks, rate themselves in the top 10 percent or above in ability on written expression. These differences by race exist within all categories of verbal SAT's, with the largest differences appearing in the middle categories. The right half of Table 4 reveals less variation between blacks and whites in self-esteem, even after controlling for verbal SAT scores. There is only a small percentage of students who have low self-evaluations on verbal-related skills. The overall differences, which had initially favored whites, diminish when SAT verbal scores are held constant. For most of the verbal skills, there is either an equal or slightly lower percentage of blacks rating themselves below average in ability.

A similar pattern exists on the interpersonal dimension (Table 6). Although the racial differences vary in magnitude among components, the most pronounced occur on skills that contribute

the greatest weight to this dimension--note the differences on leadership ability and getting along with others. Differences are not consistantly in favor of blacks on sales ability, however, this skill appears to be less strongly related to high school grades than the others, as indicated by the comparatively smaller increase in self-ratings for each increase in average grades. Controlling for grade achievement in high school does not reveal significant racially-related differences in the percentage rating themselves below average on ability to lead and getting along with others. However, on the remaining skills, for certain levels of grade performance, there is a slightly higher percentage of blacks who perceive themselves to be below average in ability compared to whites.

And lastly, there is a higher percentage of blacks rating themselves high on the math dimension within the same categories of SAT math scores (Table 5). The largest difference is on self-evaluation of mathematical ability. Although less dramatic, a similar difference exists between races on scientific ability. Self-perception of mechanical ability seems to be the only area in which blacks do not rate themselves higher than whites. Controlling for SAT math scores in this case minimized the differences, which shows that whites rate themselves higher. Still, mechanical ability appears to be the only skill on which blacks display consistently lower self-esteem than whites.

In general, a larger percentage of students, both black and white, perceive themselves to be below average in ability on math-related skills. Differences between blacks and whites on self-perception of scientific ability diminish after controlling for math SAT score. In sharp contrast, the differences between ratings on math ability are increased substantially by controlling for math SAT scores. A significantly larger percentage of whites rate themselves lower than average compared to blacks in each category of SAT math scores.

Reduced Form Regression Equations

If our analysis were ended here, we would conclude that, at equal levels of academic achievement, blacks have greater self-esteem than whites on verbal, math, and interpersonal dimensions of ability. Yet, there may also exist certain background characteristics that could explain these observed different levels of self-ratings of ability. A series of regression equations were produced in order to determine if the racially related differeces in self-esteem, which we found to be higher for blacks, hold statistical significance after the effects of selected background characteristics are added. These variables are defined in the notes to Table 7. Athough Table 7 includes much interesting information, the following discussion will focus mainly on how racially-associated differences in self-esteem are affected after other variables are entered into the equation. To avoid some possible multicollinearity

problems, variables were entered in a blocked fashion. Race is entered in Equation 1, then SAT's in Equation 2, then high school characteristics (including individual grade achievement), followed by gender, and so on.

Insert Table 7 about here

With the sole presence of race in the equation, only a small percentage of the variation in self-esteem is explained, as indicated by low R^2's. The negative beta coefficients for race suggest that whites tend to rate themselves somewhat higher in ability than black students, consistent with our findings in the t test analysis. As we saw earlier, this analysis shows that the smallest differences exist on the interpersonal dimension, and the largest on the math dimension.

With the addition of SAT scores in Equation 2, we see a substantial increase in the percentage of variance explained. More importantly, the beta coefficient for race changes both in magnitude and direction. Now, blacks are revealed to have higher self-esteem than whites, with the greatest difference on the verbal dimension. Although the race coefficient on the math dimension is relatively smaller, it is here that the greatest increase in explanatory power is produced. This all substantiates what we saw earlier: blacks rate themselves higher in ability than their white counterparts, after controlling for

Table 7

Reduced Form Regression Equations for Three Dimensions of Self-Rated Ability

Equation	Ability Dimension	RACE	SATV	SATM	GPA	HS TYPE	HS SIZE	SEX	PAED	MAED	INC	MIDW	WEST	SOUTHW	SOUTH	NORTH	R^2
1	IP	-.002															.00
	VB	-.05*															.002*
	MT	-.13*															.02*
2	IP	.06*	-.13*	-.08*													.03*
	VB	.07*	-.44*	.03*													.17*
	MT	.04*	.05*	-.61*													.33*
3	IP	.05*	-.07*	-.01	-.22*	-.02*	-.06*										.07*
	VB	.07*	-.40*	.09*	-.18*	-.01	-.04*										.19*
	MT	.04*	.09*	-.56*	-.17*	-.02*	-.02*										.35*
4	IP	.06*	-.08*	.003	-.22*	-.02*	-.06*	.02*									.07*
	VB	.07*	-.40*	.09*	-.18*	-.01	-.04*	.003									.19*
	MT	.04*	.06*	-.45*	-.23*	-.01	-.02*	.25*									.41*

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TABLE 7 Cont'.

REDUCED FORM REGRESSION EQUATIONS FOR THREE DIMENSIONS OF SELF-RATED ABILITY

5	IP	.08*	-.05*	.03*	-.23*	-.004	-.04*	.02*	-.07*	-.05*	-.07*						.09*
	VB	.08*	-.38*	.11*	-.19*	.001	-.03*	.004	-.07*	-.05*	-.03*						.20*
	MT	.04*	.07*	-.45*	-.24*	-.004	-.02*	.25*	-.03*	-.03*	-.001						.41*
6	IP	.08*	-.05*	.03*	-.23*	-.003	-.04*	.02*	-.06*	-.05*	-.08*	.003	-.04*	.01*	.001	-.01*	.09*
	VB	.08*	-.38*	.12*	-.19*	.004	-.03*	.01	-.07*	-.05*	-.03*	-.001	-.05*	.03*	.02*	-.01	.21*
	MT	.04*	.08*	-.44*	-.24*	-.004	-.02*	.25*	-.03*	-.03*	-.004	.02*	-.002	.03*	.03*	-.01*	.41*

Note. Reported are standardized regression coefficients. An asterisk indicates significance beyond the .001 level. Variables definitions are: Race 0 = blacks, 1 = whites; SAT verbal scores (SATV); SAT math scores (SATM); average of high school grades (GPA); high school type (HS TYPE); 0 = public, 1 = other; high school class size (HS SIZE); gender (SEX) 0 = male, 1 = female; father's education (PAED) and mothers education (MAED) in years; total family income in dollars (INC); and region of country including the Midwest, West, Southwest, South and North (These are a series of dummy variables. Each student is given a code of 1 for the region in which they reside, and a code of 0 on all others). Ability dimensions are: VB = Verbal abilities, MT = mathematical abilities.

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the test measures of academic achievement on self-concept of ability. Next, with the addition of grade achievement and high school characteristics, the predictive power of the equation is again increased significantly, yet the association between race and self-esteem is unaffected. The addition of gender also has no effect on the race coefficient, although there is a large increase in R^2 for the math dimension. The measured effect of race is altered slightly when socioeconomic variables are entered, but their presence only sharpens the difference between blacks and whites on self-evaluation of interpersonal and verbal ability. In the last equation, which controls for the gross, geographically-related bias in the sample of SAT takers, differences in self-esteem do appear to depend upon where one lives. Students who live in the West, for example, have slightly higher self-esteem than students from other areas of the country. Again, however, these differences do not affect the association between race and self-esteem.

In summary, although most background characteristics do have an effect on self-esteem, these influences are generally the same for both blacks and whites--as indicated by stable race coefficients in each equation. The only change in the race coefficient occurs when considering the indicators of class, which act to accentuate racially related differences. Within the limits of these measured variables, this analysis replicates the earlier reported findings. Academic achievement being

equal, blacks have higher self-esteem than whites on all three dimensions of ability.

Regression Equations Comparing Racial and Ethnic Subgroups

Separate, reduced-form regression equations were run for whites, blacks, Asians, Mexican Americans, and Puerto Ricans. Again, blocks of exogeneous variables (see Table 7) were regressed independently on three of the composite dimensions of self-rated ability: verbal, math and interpersonal. For this analysis, we will compare unstandardized regression coefficients to determine if structural differences exist in the contributions made by exogenous variables. Because these tables are complex and detailed, and because our purpose here is simply to relate the findings on blacks and whites to other racial and ethnic segments, we will only summarize a few relevant findings.

The structure of equation weights in Table 7 overall, is fairly similar across all racial and ethnic segments. The similarity in magnitude and direction among unstandardized coefficients suggests that SAT scores, grades in high school, high school characteristics, parental characteristics all affect individual self-esteem in about the same way. The equations show, for example, that a 100 point increase on the verbal SAT has about the same effect on self-perception of verbal skills for blacks as for whites, Asians, Mexican Americans, or Puerto Ricans. Some significant geographical differences do exist,

which while interesting, do not affect conclusions enough to be discussed here.

The differences among the five racial and ethnic segments depend primarily on the different starting points (the constant term) for each equation. On the equations for the verbal dimensions, after controlling for all exogenous variables, whites and Asians start at the same level of self-esteem. Blacks, Mexican Americans, and Puerto Ricans all start at another level of self-esteem that is higher than for either whites or Asians.

The starting points are more spread out among the racial and ethnic segments in the equation for the math dimension. In order from highest to lowest self-esteem are blacks, Mexican Americans, Puerto Ricans, whites, and Asians. Because Asians score higher than others on the math SAT, they end up with the highest level of self-esteem. The self-ratings on mathematical ability for Asians depend more directly on their academic achievements than other segments.

The values of the starting points among racial and ethnic subgroups are distributed in the same order as on the math dimension: blacks highest, then Mexican Americans, Puerto Ricans, whites, and Asians.

DISCUSSION

Findings

Our major findings, within the limitations of this study, are that:

1. college-bound blacks and whites evaluate themselves on the same dimensions of ability (although no claim is made that all important dimensions of self-image have been included),
2. larger percentages of blacks than whites show high self-esteem at the same level of academic achievement in high school, and
3. the level of self-esteem among blacks depends less on academic achievement in high school than does the level of self-esteem among whites.

Implications

We discourage the attitude that the above findings may be easily interpreted within preconceived notions of why black educational attainment is too low. Our position on these specific research conclusions is that they may or may not even prove to be helpful in understanding how educational inequalities associated with race are perpetuated.

These findings certainly do not allow us to choose from among the theories reviewed above (see Literature Review section). Support of the interpersonal mediation explanation of higher self-esteem among blacks is not unequivocal. Although blacks and whites seem to evaluate themselves on similar dimensions,

the possibility exists that blacks substitute alternate dimensions for self-assessment. This study had to be limited to the 14 self-rated abilities available from the Student Descriptive Questionnaire. Furthermore, because we did not measure the relative importance of the factor dimensions, the question as to whether blacks and whites place the same weight on each ability dimension is left unanswered. The greater self-esteem of blacks at each level of academic achievement may tend to support the subcultural encapsulation perspective. Yet since black self-esteem overall is lower than for whites, that finding is also consistent with social comparison theory. Consistent with the theory of reflected appraisal is the finding that blacks are indeed affected by their academic achievement in high school as reflected by the correlation (albeit smaller than for whites) between academic achievement and self-esteem. We can only speculate that some or all of the reviewed theories may be middle-range explanations that themselves need to be subsumed under a higher-level theory.

The level of self-esteem among college-bound blacks is more than an exercise in finding the appropriate theoretical explanation. The National Research Council (1982) reviewed studies that show that test scores are not biased against blacks, i.e. that test scores do not underpredict, compared to white achievement, the later academic performance of blacks. Bias is not the only question, however; those research findings

do not address the more important issues of whether SAT scores are the best predictors of college achievement among blacks or whether the use of test scores should be one of the primary selection criteria for the admission of minority applicants (see Astin, 1982 for a discussion of the last issue).

Particularly significant in considering the implications of our study is research that suggests that among minority students, self-esteem and self-concept may be better predictors than SAT scores and academic rank of achievement in college.^16 These research findings make it imperative that more consideration be given to the consequences of racially-related differences in self-conceptions of ability.

After more pieces have been added to the puzzle, research findings on self-concept of ability may help shape the direction of college preparatory programs in high school and of independent programs (such as Upward Bound), which are targeted for blacks or other minorites. In turn, as we also begin to understand more of the consequences as well as the determinants of self-esteem, colleges may benefit from an understanding of how members of minority groups may suffer special self-image problems in institutions that lack sufficient support services for minority students. Findings may also go further towards explaining why blacks are more likely to attend two-year community colleges close to home (despite higher self-esteem, blacks may not want to give up the support system that they enjoy where they live) and why the dropout rate among blacks in

college is disproportionately high (perhaps because conditions at college erode their confidence).

Suggestions for Future Research

A great deal of theoretical work is needed to place the above findings into a model of educational attainment that can account for differences among racial and ethnic subgroups. There is a large literature in sociology on status attainment that has addressed this concern, but we will not review it here.

More descriptive analysis is needed to make comparisons among the major racial and ethnic subgroups.17^ We suggest that the findings reported here be extended to include Mexican Americans, Puerto Ricans, native Americans, and Asians.

We suggest that future research examine the changes in relative self-esteem between blacks and whites across college-bound populations over the last ten years and that analyses be extended to other racial and ethnic subgroups. Such research would add considerably to our knowledge of whether the progress of blacks in recent years in narrowing the gap with whites in mean SAT scores is related to changes in self-esteem. A perspective that includes changes across time is also more likely to provide better information on the structural factors that affect the process by which self-esteem is created.

We encourage other educational researchers to take advantage of the recent change in College Board policy that makes available the large and rich data base on college-bound students.

REFERENCE NOTES (corrected copy)

1^ College Entrance Examination Board (1982).

2^ See Preface (p.iii-iv, CEEB, 1982) by the President of the College Board, George Hanford.

3^ See the Statement of Board Policy (p. 103, CEEB, 1982).

4^ See Astin (pp. 157-164, 1982) on cultural bias issues.

5^ See Brookover, Paterson and Thomas (1962).

6^ See Wylie (1979) for an extensive review of this literature.

7^ See Rosenberg (1979).

8^ See Porter and Washington (1979) for an intensive review of this literature.

9^ See Coleman, et al (1966).

10^ See Rosenberg and Simmons (1971).

11^ See McCarthy and Yancey (1972).

12^ See Wylie (1979).

13^ See Adams (1978).

14^ See Simmons (1978).

15^ See Armstrong and Jensen (1975) and Baird (1976).

16^ See Sedlacek (1977).

17^ See Ramist and Arbeiter (1984a and 1984b) for more recent profiles of 1981 and 1982 college-bound seniors. The second reference is particularly helpful because it highlights differences among minority groups.

18^ See Astin (1982) for a discussion of relative, college-going participation rates.

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